Coachella Valley Mosquito and Vector Control District

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January 5, 2007

Dale Hoffman-Floerke
Salton Sea PEIR Comments
Department of Water Resources
1416 9th Street, Room 1148-6
Sacramento, CA 95814

Subject: Comments Regarding the Draft Programmatic Environmental Impact Report (PEIR) on the Salton Sea Restoration Alternatives

Dear Ms. Hoffman-Floerke:

As alternatives for restoration of the Salton Sea have been discussed, the Coachella Valley Mosquito and Vector Control District (District) has consistently expressed its concerns to the Salton Sea Authority regarding many aspects of the proposals. These concerns continue to be relevant as we review the current proposed alternatives.

A major concern of the District is that the restoration efforts and proposed wetlands will introduce new breeding habitats for the West Nile virus primary vector mosquito, *Culex tarsalis* Coquillett, at the north and south ends of the Salton Sea. It is well established that constructed wetlands rapidly become heavy breeding grounds for mosquitoes. We are also concerned that proposed measures for economic development and recreational opportunities at the Salton Sea fail to include mitigating measures for increased mosquito populations that will affect public health.

The District's staff is closely involved in the control of mosquitoes that are recognized vectors of West Nile (WN), Saint Louis encephalitis (SLE), and western equine encephalomyelitis (WEE) viruses. According to surveillance program data, these viruses are especially active in southern California's Coachella and Imperial Valleys. The University of California Davis Center for Vectorborne Diseases' research data indicates that shoreline habitats along the Salton Sea are the focus of yearly virus amplification.

The breeding habitat for the primary vector species *Culex tarsalis* covers a wide range of water quality, from fresh to very high salinity – up to 35 parts per thousands (ppt). Due to the highly adaptable nature of *Culex tarsalis,* any shallow standing water should be considered a potential breeding site. There is no question that control has played a major role in the decrease of human cases of vector-borne diseases; however, the viruses remain in their enzoonotic cycles between the mosquito *Culex tarsalis* and wildlife birds.

West Nile virus is a single-stranded RNA flavivirus within the Japanese encephalitis antigenic complex that includes Japanese encephalitis virus in Asia, St Louis encephalitis virus in North and South America, and Kunjin and Murray Valley encephalitis viruses in Australia. In nature, West Nile virus is maintained in a mosquito-bird-mosquito transmission cycle wherein birds serve as the natural reservoir hosts for the virus that primarily involves the *Culex* species mosquitoes. Transmission occurs in a continuous cycle characterized by amplification during episodes of adult mosquitoes feeding on avian hosts. Infected birds commonly survive their infection; however, in North America, crows and blue jays have suffered significant mortality.

Migratory birds use four major migratory routes (Pacific, Central, Mississippi, and Atlantic flyways) in North America. The Salton Sea and the wetlands along its shoreline are a critical part of the Pacific Flyway (a major migratory avian corridor) providing permanent habitat and seasonal refuge to millions of birds representing hundreds of species. Most migratory game bird populations are monitored through the cooperative efforts of biologists from state, federal, and provincial agencies. West Nile virus has been detected in at least 138 species. Although birds, particularly crows and jays, infected with WNV can die or become ill, most infected birds do survive. Based on the detection of WNV specific antibodies in these birds, scientists are seeing an increasing number of birds that have been exposed to and survived infection with WNV. Scientists have also detected WNV viremias in birds. Most interestingly, all these birds were sampled at a critical time of migration when they could have transported WNV along the migration corridor.

West Nile virus does not appear to cause extensive illness in dogs or cats. The Center for Disease Control has received a small number of reports of WN virus infection in bats, as well as a chipmunk, skunk, squirrel, and a domestic rabbit. Cases of WN virus disease in horses have been documented through virus isolation or through detection of WN virus-neutralizing antibodies. Humans, horses, and most other mammals are not known to frequently develop infectious-level viremias and, thus, are likely "dead-end" or incidental-hosts.

West Nile virus is an important public health problem in North America. In 2002, for example, CDC received 4,156 reports of human disease cases due to WNV in 44 states. Of these, about 3,000 were central nervous system (CNS) disease cases, and the others were either West Nile fever or clinically uncharacterized. Of the cases of WNV disease

of the CNS, nearly 300 (about 10%) were fatal. In addition, many survivors have experienced short-term or long-term sequelae. Since the mid-1990s, the frequency and apparent clinical severity of WNV outbreaks have increased. Outbreaks in Romania (1996), Russia (1999), and Israel (2000) involved hundreds of persons with severe neurological disease. The severe symptoms in humans can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and paralysis. These symptoms may last several weeks and neurological effects may be permanent.

West Nile poliomyelitis, a flaccid paralysis syndrome associated with WNV infection, is less common than meningitis or encephalitis. This syndrome is generally characterized by the acute onset of asymmetric limb weakness or paralysis in the absence of sensory loss. Pain sometimes precedes the paralysis. The paralysis can occur in the absence of fever, headache, or other common symptoms associated with WNV infection. Involvement of respiratory muscles leading to acute respiratory failure can sometimes occur.

We believe many residents of the Coachella Valley who have been bitten by an infected mosquito have developed some antibodies to viruses that have been present in the Valley for a long time, i.e., SLE, WEE and West Nile viruses. However, visitors to the Coachella Valley who may be exposed to these viruses for the first time may have more serious effects. During 1993-1994, a study was initiated to determine the seroprevalance of antibodies to WEE and SLE in residents of the southern Coachella Valley. Studied were outpatients of the El Progresso del Desierto Family Health Center (1993-1994), the Progressive Health Clinic in Coachella (1994), and the Indio Health Center (1994). Overall, 19 (2.6%) and 118 (16.4%) sera were positive to antibodies of WEE and SLE, respectively.

The primary function of the District is to maintain a healthy living environment through the prevention of vector-borne diseases in this area. Under difficult conditions, the District has managed to control mosquitoes around the Salton Sea. The proposed projects increase our concerns for public health, especially with the new West Nile virus that was first identified in the summer of 1999 in New York City and in 2003 in California. Nation-wide over the last 6 years, more than 23,000 human cases have been detected resulting in more than 900 deaths.

All residents of areas where virus activity has been identified are at risk of acquiring West Nile encephalitis; persons over 50 years of age have the highest risk of severe disease. It is unknown if persons with weakened immune systems are at an increased risk for WNV disease. The most effective means for limiting the risk of any of mosquito-borne virus infection is through elimination of mosquito breeding sites. Regrettably, the proposed projects dramatically increase the potential breeding area for mosquitoes. Additionally, none of the proposals provide data on:

- Type of construction of the treatment wetlands.

- Mitigation measures that would protect the public from increased health risks caused by the increased mosquito populations.
- Participation of a local health or vector control institution to act as a consultant for the proposed project.

Proposals concerning the restoration of the Salton Sea must address issues of public health that involve mosquito-borne diseases. Without the information listed above, our District will have a difficult time supporting any of the proposals. Thank you for your consideration of our comments.

Sincerely,

Donald E. Gomsi,
General Manager